REMARKS

In the Office Action, the Examiner reviewed claims 1-44 of the above-identified US Patent Application, with the result that all of the claims were rejected under 35 USC §102 in view of U.S. Patent No. 5,305,974 to Willis. In response, Applicant has amended the specification and claims as set forth above. More particularly:

The specification has been amended at paragraph [0024] to correctly reflect that coils provided on the payload (14) would not be the same coils 10 through or by which the payload (14) moves, and at paragraph [0035] to clarify that Figure 8 does not depict the deflection technique in which "the magnetic fields cooperate to push the payload 14 away from the coils 10."

Independent claims 1 and 25 have been amended to clarify that the "object" (14) is an element of the claimed apparatus, and that the magnetic field (22) alters the trajectory and/or speed of the object (14) to inject or eject the object (14) from orbit along an orbital path (26). Support for the latter amendment can be found in Applicant's specification at paragraph [0007] and Figures 7-10, 12, and 13.[1]

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[1] According to MPEP §2163 II.A.3(a), "drawings alone may provide a 'written description' of an invention as required by [35 USC §112, first paragraph]," and "[i]n those instances where a visual representation can flesh out words, drawings may be used in the same manner and with the same limitations as the specification." (Citations omitted).

Dependent claim 4 has been amended to recite that the generating means (10) is configured so that the object (14) passes completely therethrough, as shown in Figures 1 and 2.

Dependent claim 7 has been amended to clarify that a coil (10) defines an opening (20), and the object (14) moves past but not through the opening (12) as shown in Figures 7, 8, and 10.

Dependent claims 9 and 30 have been amended to recite that each of a plurality of concentrically-aligned coils (10) generates a magnetic field that alters the speed of the object (14), as shown in Figure 1.

Dependent claims 10 and 31 have been amended to correspond to the above-noted amendments to their parent claims 9 and 30, respectively.

Dependent claims 11 and 32 have been amended recite that each of a plurality of arcuately-aligned coils (10) generates a magnetic field that alters at least the trajectory speed of the object (14), as shown in Figure 7, 8, and 10.

Dependent claims 12, 13, 33, and 34 have been amended to correspond to the above-noted amendments to their parent claims 11 and 32.

Dependent claims 13, 24, 34, and 44 have been amended to correct a clerical error, and thereby recite the pushing/pulling capability of the coils (10) shown in Figure 7, 8, and 10.

Independent claims 19 and 39 have been amended to clarify that the

coils (10) are aligned, separated, and spaced apart from each other along a path, and are oriented and spaced along the path so that each of their magnetic fields (22) alters the trajectory and speed of the object (14) as the object (14) moves in proximity to the path. Support for this amendment can be found in Applicant's Figures 1, 7, and 8

Dependent claims 20 and 40 have been amended to allow some of the coils 10 to be not concentrically aligned, and that the object (14) passes successively through the openings (20) of the concentrically-aligned coils (10) as shown in Figure 1.

Dependent claim 21 has been amended to recite that at least a portion of the path (12) is an orbital path (26), as shown in Figures 7-10.

Dependent claim 22 has been amended to omit the limitation that the apparatus is an orbital payload catcher and launcher.

Dependent claims 23, 24, 43, and 44 have been amended to allow some of the coils 10 to be not arcuately aligned.

Dependent claim 28 has been amended in view of the amendment to its parent claim 25.

Claim 29, which originally depended from independent claim 25, has been rewritten in independent form to incorporate the limitations of its parent claim 25 as filed, and has been further amended to recite that the object (14)

moves past but not through the opening (12) as shown in Figures 7, 8, and 10.

In addition to the above-noted amendments, claim 32, which originally depended from independent claim 25, has been amended to depend from new independent claim 29.

Dependent claim 41 has been amended to rephrase capture of the object as injecting the object (14) into orbit along an orbital path (26), as shown in Applicant's Figures 3 and 7-10.

Dependent claim 42 has been amended to clarify that each coil (10) captures and stores energy, and that launching of the object (14) involves ejecting the object (14) from the orbital path (26).

Applicant believes that the above amendments do not present new matter. Favorable reconsideration and allowance of claims 1-44 are respectfully requested in view of the above amendments and the following remarks.

Rejection under 35 USC §102

Independent claims 1, 19, 25, and 39 and their dependent claims were rejected under 35 USC §102(b) as being anticipated by Willis on the basis that Willis' Figures show "center coils are used to control direction of 20 from 14 to 16. Applicant respectfully requests reconsideration of this rejection

in view of the amendments presented above as well as the following comments.

As noted in §2131 of the MPEP:

> A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the ...claim. The elements must be arranged as required by the claim, but this is not an ipsissimis verbis test, i.e. identity of terminology is not required. (Citations omitted).

The Office Action does not set forth how elements disclosed by Willis correspond, expressly or inherently, to each and every element set forth in the rejected claims. Applicants have reviewed Willis in an attempt to discern the basis for the rejections, and in doing so provide the following comments regarding certain of Applicant's claims.

Applicant's independent claim 1 requires an apparatus in a zero or low-gravity environment, wherein the apparatus comprises means (10) for generating a magnetic field (22) in proximity to an orbital path (26) and an object (14) moving in proximity to the generating means (10) so that the magnetic field (22) alters the trajectory and/or speed of the object (14) to inject the object (14) into orbit along the orbital path (26) or eject the object (14) from the orbital path (26). In contrast, while Willis discloses the use of magnetic

fields (produced by electromagnetic projectile launchers (EMPL) 12, 14, and 16) to launch and capture projectiles 20, Willis's EMPL's 12, 14, and 16 are not operable to inject or eject the projectiles 20 from an orbital path. Instead, Willis' teachings are limited to purely linear travel of the projectiles 20 between two bodies, e.g., the moons of Earth and Mars (except when the projectiles 20 themselves are operated to leave the linear path initiated by the EMPL's 12, 14, and 16.)

In view of the above, Applicant believes that Willis does not anticipate independent claim 1 nor any of its dependent claims 2-18 under the test for anticipation set forth at MPEP §2131.

Applicant's independent claim 19 requires an apparatus in a zero or low-gravity environment, wherein the apparatus comprises a plurality of coils (10) aligned, separated, and spaced apart from each other along a path, and the coils (10) generate magnetic fields (22) that cooperate to alter the trajectory and speed of an object (14) as the object (14) moves in proximity to the path. In contrast, while Willis discloses the use of magnetic fields produced by the EMPL's 12, 14, and 16, the EMPL's 12, 14, and 16 are limited to altering the speed of the projectiles 20, and do not alter the trajectories of the projectiles 20. As a result, Willis' teachings are limited to purely linear travel of the

projectiles 20 (except when the projectiles 20 themselves are operated to leave the linear path initiated by the EMPL's 12, 14, and 16.)

In view of the above, Applicant believes that Willis does not anticipate independent claim 19 nor any of its dependent claims 20-24 under the test for anticipation set forth at MPEP §2131.

Applicant's independent claim 25 requires a method of transferring an object (14) to an orbital path (26) in a zero or low-gravity environment, wherein a magnetic field (22) is generated in proximity to the orbital path (26) and the object (14) moves in proximity to the magnetic field (22) such that the object (14) is injected (14) into orbit along the orbital path (26). In contrast, while Willis discloses the use of EMPL's 12, 14, and 16 to generate magnetic fields to launch and capture projectiles 20, Willis does not disclose using the magnetic fields to inject or eject the projectiles 20 from an orbital path. Instead, Willis' teachings are limited to purely linear travel of the projectiles 20 between two bodies, e.g., the moons of Earth and Mars (except when the projectiles 20 themselves are operated to leave the linear path initiated by the EMPL's 12, 14, and 16.)

In view of the above, Applicant believes that Willis does not anticipate independent claim 25 nor any of its dependent claims 26-28, 30, 31, and 35-38

under the test for anticipation set forth at MPEP §2131.

Applicant's new independent claim 29 requires a method of maneuvering an object (14) in a zero or low-gravity environment, wherein a magnetic field (22) is generated by at least one coil (10) defining an opening (20) and the magnetic field (22) alters the trajectory of the object (14) as the object (14) moves past but not through the opening (20). In contrast, Willis' teachings are limited to projectiles 20 that travel through the openings of the EMPL's 12, 14, and 16.

In view of the above, Applicant believes that Willis does not anticipate independent claim 29 nor any of its dependent claims 32-34 under the test for anticipation set forth at MPEP §2131.

Applicant's independent claim 39 requires a method of maneuvering an object (14) in a zero or low-gravity environment, wherein the method comprises causing the object (14) to move in proximity to a plurality of coils (10) aligned, separated, and spaced apart from each other along a path, and the coils (10) generate magnetic fields (22) that cooperate to alter the trajectory and speed of the object (14) as the object (14) moves in proximity to the path. In contrast, while Willis discloses the use of magnetic fields produced by the

EMPL's 12, 14, and 16, the EMPL's 12, 14, and 16 are limited to altering the speed of the projectiles 20, and do not alter the trajectories of the projectiles 20. As a result, Willis' teachings are limited to purely linear travel of the projectiles 20 (except when the projectiles 20 themselves are operated to leave the linear path initiated by the EMPL's 12, 14, and 16.)

In view of the above, Applicant believes that Willis does not anticipate independent claim 39 nor any of its dependent claims 40-44 under the test for anticipation set forth at MPEP §2131.

In addition to the above, Applicant believes that Willis does not disclose or teach other limitations recited in Applicant's claims, including but not limited to the following.

A magnetic field generating means configured to enable an the object to pass completely through the generating means (claim 4). Willis' projectiles 20 enter and remain within the EMPL's 12, 14, and 16 until propelled therefrom.

A magnetic field generating means configured to alter only the trajectory of an object as the object moves past but not through the opening (claims 7).

A magnetic field generating means comprising a plurality of concentrically aligned coils, each generating a magnetic field that alters the

speed of the object (claim 9).

Concentrically-aligned coils having decreasing sizes in one direction of their concentric alignment (claims 10 ad 31).

A magnetic field generating means comprising a plurality of coils aligned along an arcuate path (claims 11 and 32).

Arcuately-aligned coils with axes aligned as radii of a circle to push an object away from the coils or pull an object toward the coils (claims 12 , 23, 33, and 43).

Arcuately-aligned coils with axes aligned as radii of a spiral to push an object away from the coils or pull an object toward the coils (claims 13, 24, 34, and 44).

Magnetic field generating means capable of capturing and storing energy of a back-emf pulse created as the object enters the magnetic field (claims 17, 22, 37, and 42).

Concentrically-aligned coils with openings through which an object passes successively (claims 20 and 40).

A magnetic field generating means placed on a path of which at least a portion is an orbital path (claim 21).

Accelerating an object with a magnetic field to cause the object to leave an orbital path (claim 28).

Concentrically-aligned coils generating a magnetic field that alters the speed of an object to inject the object into orbit along an orbital path (claim 30).

Injecting an object into orbit along an orbital path (claim 41).

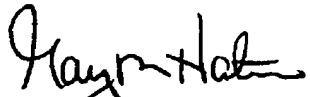
For all of the above reasons, Applicant respectfully requests withdrawal of the rejection under 35 USC §102.

Closing

In view of the above, Applicant believes that the claims define patentable novelty over all the references, alone or in combination, of record. It is therefore respectfully requested that this patent application be given favorable reconsideration.

Should the Examiner have any questions with respect to any matter now of record, Applicant's representative may be reached at (219) 462-4999.

Respectfully submitted,

By 
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